



Insulation coatings  
Corrosion protection

# **SUPER THERM<sup>®</sup>**

## **THERMAL BARRIER CERAMIC COATING**

**Superior Products Europe n.v. / s.a.**

Kampweg 123 - 2990 Wuustwezel (Antwerp) - Belgium - T: +32 (0)3 690 02 40 - F: +32 (0)3 690 02 41

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# SUPER THERM<sup>®</sup>: the 21st century insulation!

## Description

SUPER THERM<sup>®</sup> is a unique one-part thermal insulating coating composed of high-performance aliphatic urethanes, elastomeric acrylics and resin additives in a waterborne formula.

SUPER THERM<sup>®</sup> is designed with four different ceramics that block 95% of the three sources of heat of the sun. (Visual light, UV- rays and IR- rays). Two are reflective, one acts as a non conductor and the fourth blocks the IR- rays.

On top SUPER THERM<sup>®</sup> emits 92% of the heat of the surface thanks to the extreme low density of the unique ceramic blend.

This allows SUPER THERM<sup>®</sup> to be the only ceramic coating rated as an insulator compared to other coatings only containing glass hollow spheres that reflect visual light heat when clean. Due to the unique combination of acrylics and urethanes, SUPER THERM<sup>®</sup> cures out completely in 14 to 21 days to an extremely tough, durable, non-yellowing water resistant coating.

SUPER THERM<sup>®</sup> is a permanently flexible "breathing" membrane that stops water penetration and helps to prevent condensation and thus corrosion. It should be noted, that the ceramics offer a slight texture versus a smooth finish.

## Typical uses

As a one-coat insulation system:

- on exterior and interior substrates (roofs and walls) to reduce energy costs from cooling or heating and increase comfort
- on refrigerated containers, mobile homes, coaches and railroad cars to protect goods and reduce costs
- on HVAC systems, oil pipes and tanks, storage systems and ships to stop condensation and corrosion
- in grain silos to prevent mold and mildew and to increase longevity
- on animal shelters to prevent heat stress
- over RUST GRIP<sup>®</sup> on metal roofs

## Features

Colour: white

Solids: by weight 63.6% / by volume 68%

Water based: no co-solvents present, curing by evaporation

VOC (Volatile Organic Compounds): 21 gr/l

Density: 1,424 kg/l (11.88 lbs/gal)

PH: 8,5-9

Viscosity: 105-110 KU

Elongation: 125%

Sound deadening features: STC 48 - 51

Lead and chromate free.



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## Application instructions

### General conditions

SUPER THERM<sup>®</sup> is water based coating and must be protected against frost! SUPER THERM<sup>®</sup> must be mixed mechanically for 2 minutes and is ready for use.

**SUPER THERM<sup>®</sup> MAY NOT BE DILUTED!**

Application temperatures range from 5°C to 40°C, but the optimum application temperature is 21°C. Never apply if it's raining or if there is a chance to rain. If applied when humidity is high or it rains constantly for days after SUPER THERM<sup>®</sup> is applied, you may notice some bubbling effects on the coating.

DO NOT PUNCTURE these bubbles. This is normal as the formula is water based and is absorbing the moisture, therefore forming bubbles. After the rain stops, the sun will dry out the coating and allows it to cure down naturally. As the sun draws out the moisture, the bubbles will settle down and allow the coating to adhere in its normal dry down without problem.

### Surface preparation

SUPER THERM<sup>®</sup> can bond to metal, wood, roofing, PU-foam, concrete, masonry, PVC and polyester. Loose material such as flaking paint, rust, dirt, dust, grease, oil, waxy substances or other matter which would affect bonding, must be removed. High-pressure water blasting (240 bar) with TSP is as effective as light sand blasting. Old paints can remain if bonded solidly to surfaces. Glossy surfaces must be sanded or roughened by mechanical brush. If rust appears, apply RUST GRIP<sup>®</sup> according to prescribed application instructions and coating thickness. In coastal areas CHLOR-RID should replace the citrus cleaner to remove salts. Very porous or old and dry substrates (concrete, roofing) should be primed first with SUPER BASE.

Surfaces must be clean, dry and sound before application.

### Application methods

SUPER THERM<sup>®</sup> can be best applied by airless or air pot sprayer, but also by 8 cm nap roller or soft brush. If rolling or brushing, always apply two coats in cross hatched method and allow 1 to 2 hours to dry between coats, to achieve the required thickness (250 micron DFT). Do not apply very thick on a single coat. A thick coat will allow the surface to dry before the bottom thus creating cracks. Spraying requires a (0.029 - 0.032) steel carbon tip and a pressure from 180 to 200 bar.

**REMOVE ALL FILTERS FROM THE GUN HANDLE AND SPRAY MACHINE PRIOR TO APPLICATION AS THEY WILL TRAP THE CERAMICS.**

Clean equipment with water and soap.

### Recommended spread rates

Spread rate: 2,45 m<sup>2</sup>/lit (100sq.ft./gal) = 250 micron DFT (10 mil)

Wet : 400 micron - 16 mil / 581 gr/m<sup>2</sup>

Dry : 250 micron - 10 mil - 366 gr/m<sup>2</sup>

Dry times: 1 hour to touch at 21°C and 2 hours to recoat.

Full cure: 14 to 21 days

Under no circumstances should SUPER THERM<sup>®</sup> be applied to a thickness of less than sixteen (16) mil wet.



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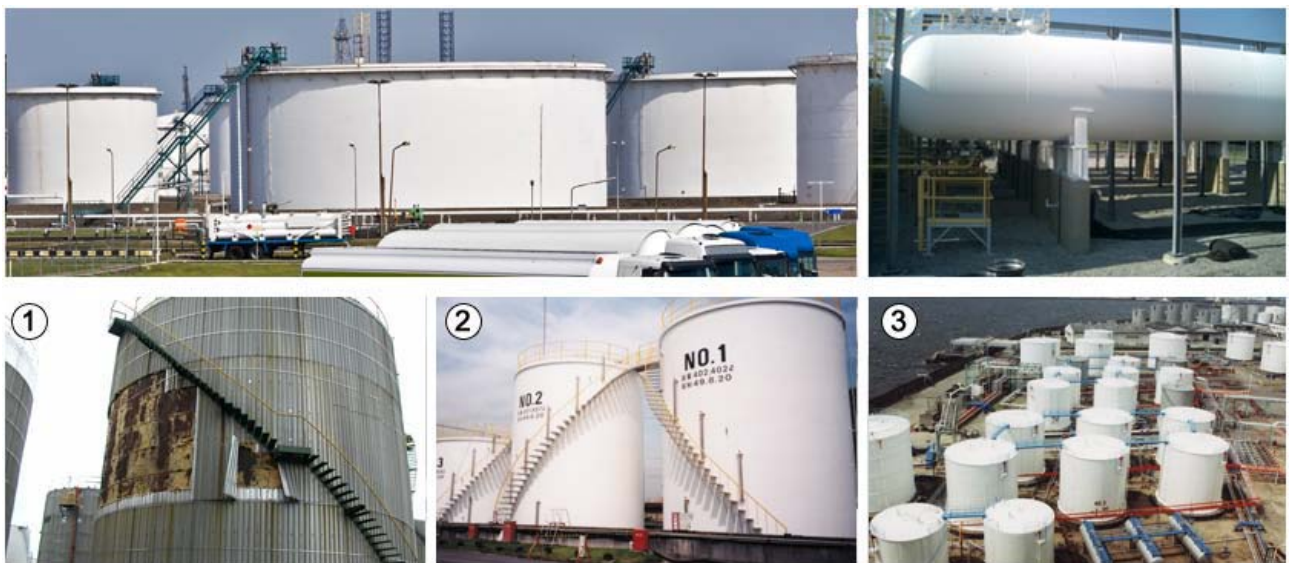
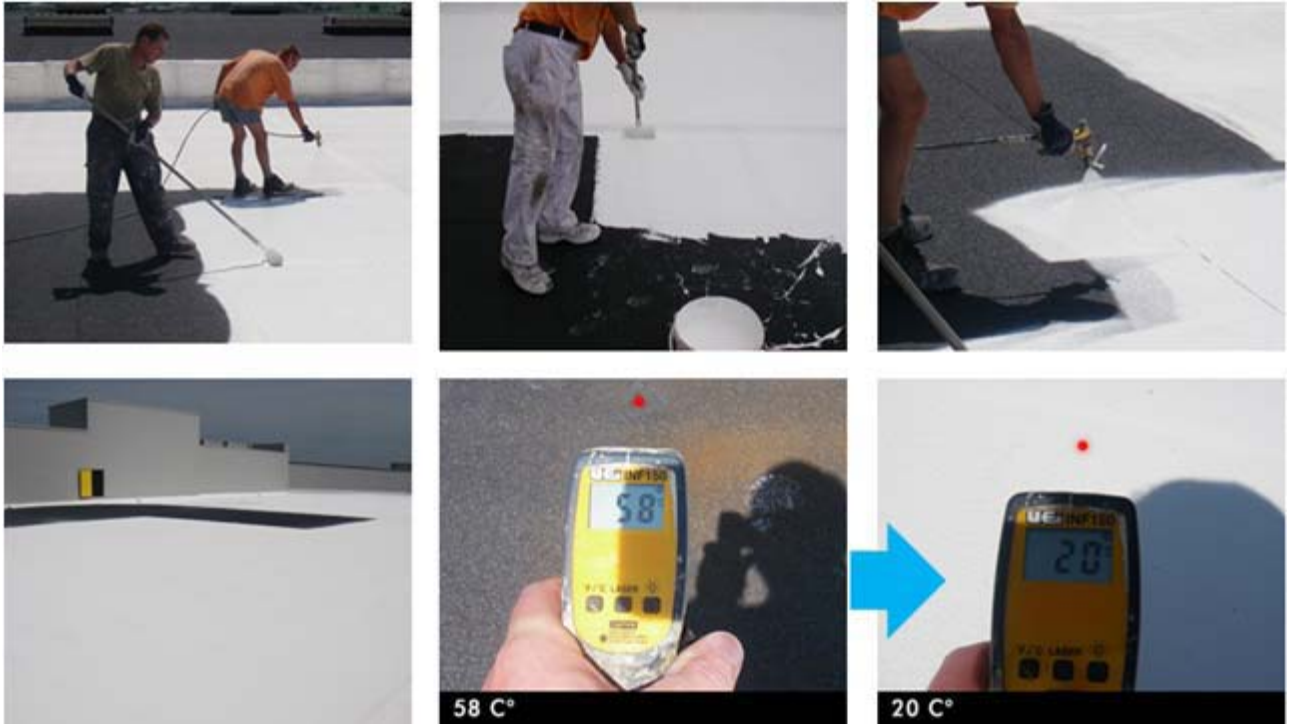
## Standard packaging

Plastic pails containing 5 US gallon (18,925 l).

Pot life: 3 years when stored between 5°C en 35°C in originally closed pails.

## Important

Do not take internally. Avoid contact with eyes. If solution does come in contact with eyes, flush immediately with water and contact a physician for medical care. Avoid prolonged contact with skin or breathing of the spray mist. For quickest removal from skin, wash with water before drying. Keep out of reach of children.



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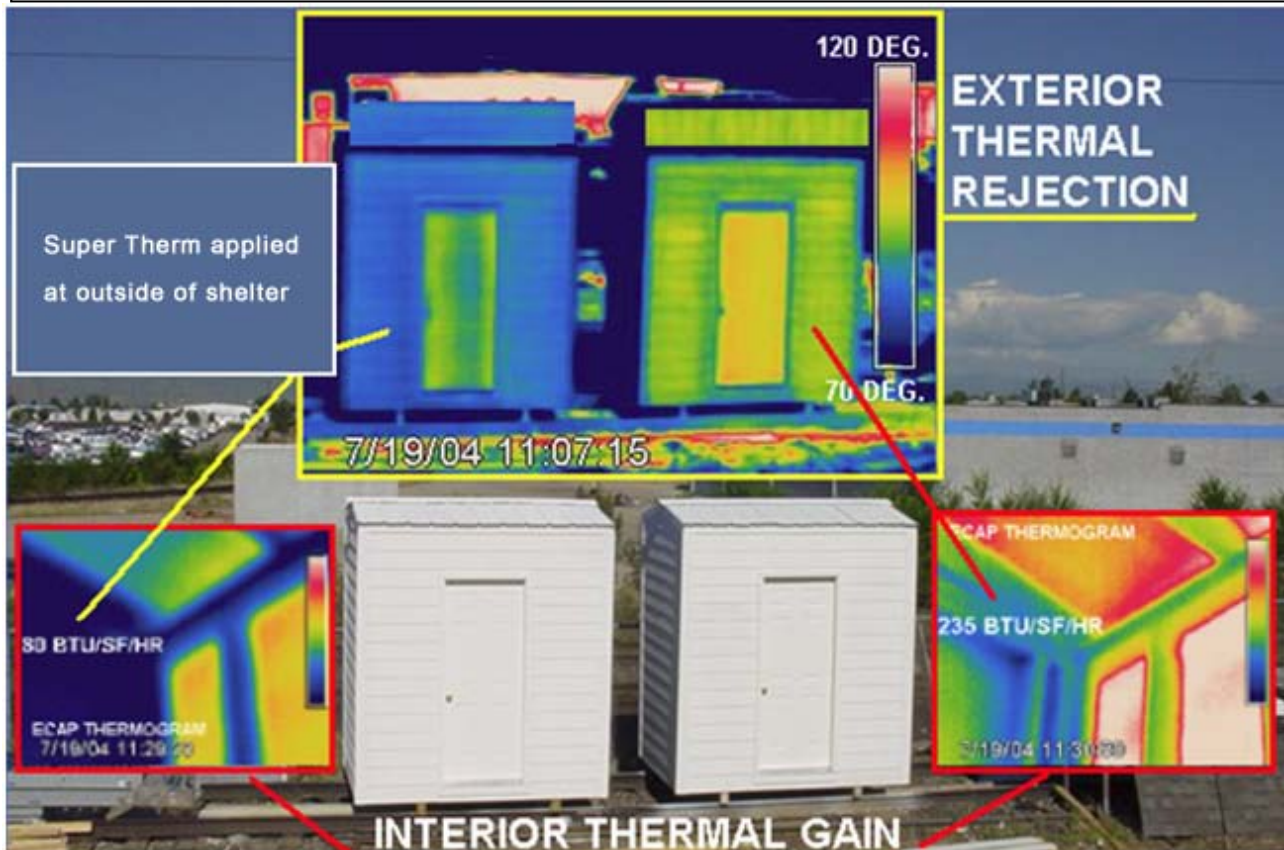
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## EXAMPLES - RESULTS



Test application Vodafone: at your left a standard shelter. Right hand side an identical shelter with SUPER THERM® applied on the outside. **Goal:** keep a constant temperature of 23 °C inside the shelter and reduce the use of energy of the airco's. **Results:** measurements by Vodafone indicate an average of 52,5% gain in electricity consumption for shelters applied with SUPER THERM®.

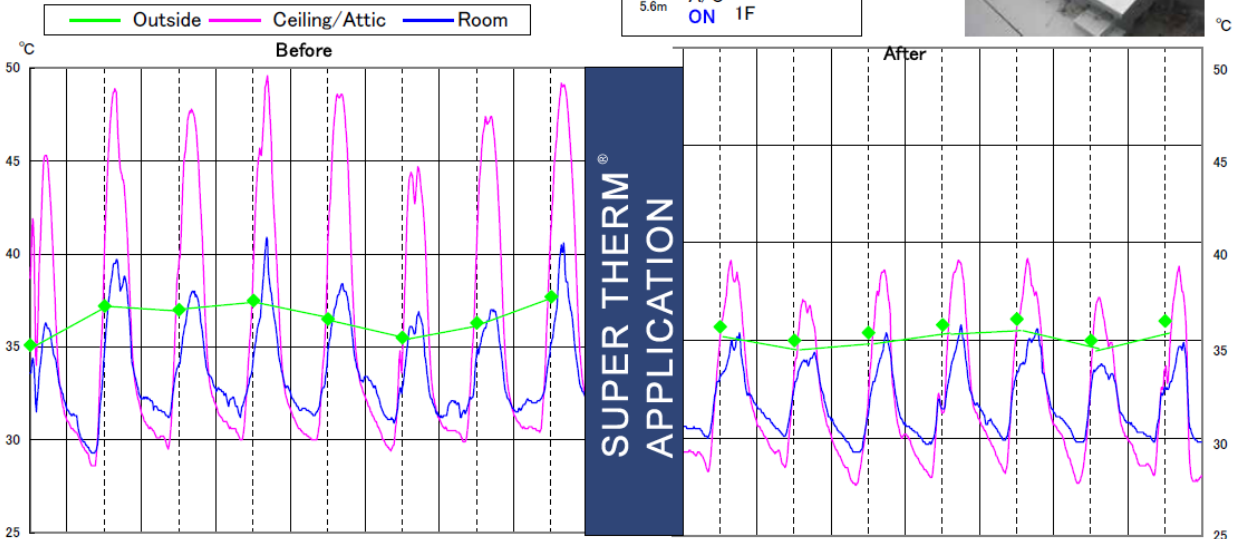
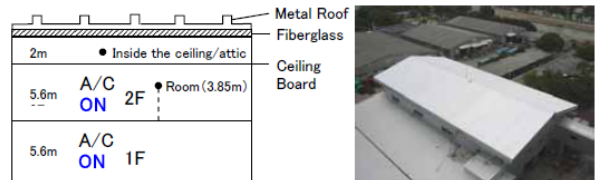


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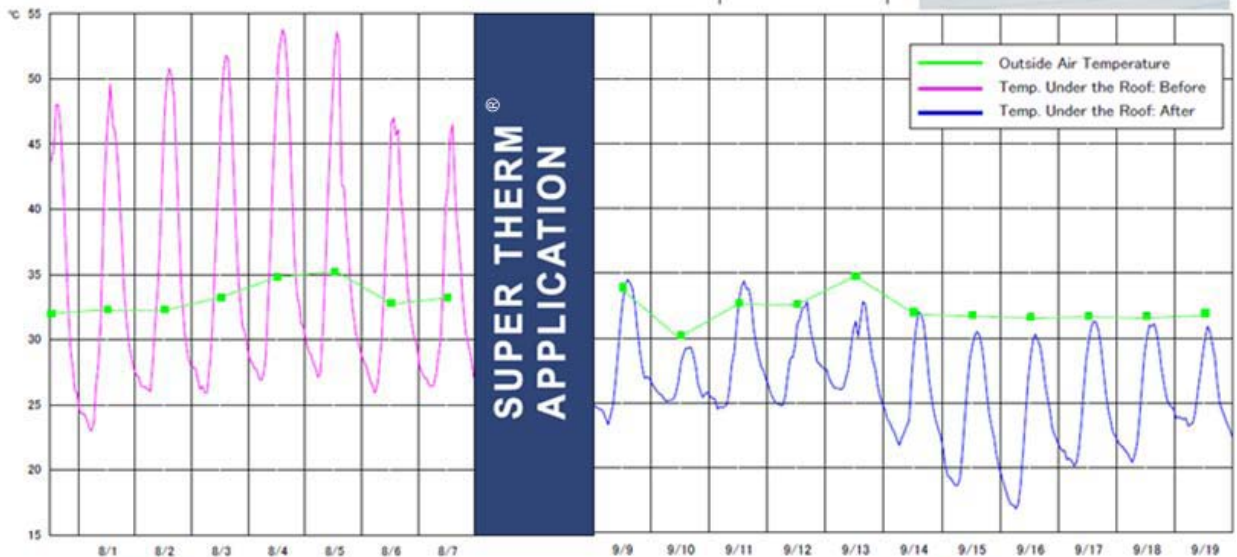
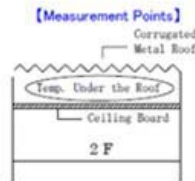
The temperature has reduced by about 10 °C inside the ceiling/attic, and the room temp. by about 3.5 °C. The temperature at night has also reduced by 2 to 3 °C.



Date	4/6	4/7	4/8	4/9	4/10	4/11	4/12	SUPER THERM APPLICATION	5/30	5/31	6/1	6/2	6/3	6/4	6/5
Max. Outside Temp.	37.2	37.0	37.5	36.5	35.5	36.3	37.7		35.7	35.0	35.4	35.2	36.1	35.0	36.0
Max. Ceiling Temp.	48.9	47.8	49.6	48.6	44.7	47.4	49.2		39.1	37.1	38.6	39.1	39.2	37.2	38.8
Max. Room Temp.	39.7	38.0	40.9	38.4	36.9	37.0	40.6		35.4	34.4	35.4	35.8	35.6	33.8	34.9

## Matsushita Electronic Components Corp Module Device Company

When the weather condition was similar (temp about 32 °C),  
temperature under the roof was reduced by 20.3 °C  
Before: 50.8 °C - After: 30.5 °C



Weather	Cloudy/Fine	Fine	Cloudy/Fine	Cloudy/Fine	Fine	Cloudy	Cloudy	Super Therm Application	Cloudy/Fine	Rain/Cloudy	Fine/Cloudy	Cloudy/Fine	Cloudy/Rain	Rain/Fine	Fine	Cloudy/Fine	Fine/Cloudy	Fine	Cloudy
Max. Outside Temp.	32.3	32.3	33.2	34.8	35.2	32.8	33.2		33.9	30.2	32.7	32.6	34.8	32	31.8	31.6	31.7	31.7	31.9
Max. Temp. Under the Roof	49.6	50.8	51.8	53.8	53.6	47	46.5		34.5	29.3	34.4	32.8	32.8	32	30.5	30.3	31.3	31.1	30.9

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# TESTING

## **SUPER THERM® meets the following tests:**

### **1. ASTM (American Society for Testing and Materials):**

- B117/D 1654: Salt Spray (Fog) corrosion test 450 and 2000 hours passed.
- B3359: Adhesion capacities: 5B
- C 177 : Thermal Conductivity
- C236-89 (93): Thermal conductance:
  - a. Fiberglass; 0,52 Btu/sq.ft/hr/F
  - b. SUPER THERM® in 1coat; 0,31 Btu/sq.ft/hr/F
  - c. SUPER THERM® in 2 coats; 0,21 Btu/sq.ft/hr/F
- C411: High Temperature Surface Performance 96 hours at 147°C
- D412: Tensile Properties 444 psi
- D522: Mandrel Bend on metal or rubber materials -1" (25mm) bend
- D1653: Water Vapor Permeability 3 %
- D3274: Fungal Resistance Score: 9/10
- D4060: Abrasion Resistance
- D6904: SUPER THERM® resists wind driven rain and is recognized as a water barrier
- E 84-89<sup>a</sup> Flame Spread / Smoke Developed: Flame Index "0" and Smoke Index "0"
- E 96 Water Vapor Transmission
- E108: Standard Test Method for Fire Tests of Roof Coverings
- E903-96: Reflectance after 10 years, only 3% reduction
- E1269: Heat Capacity by Differential Scanning Calorimeter:
  - a. metal plate; 367.20 Btu/sq.ft/hr/F
  - b. metal plate with 250 micron SUPER THERM® only 3,99 Btu/sq.ft/hr/F
- G53: 1000 hours UV exposed
- UL723: Fire test Class A

### **2. Fraunhofer Institute in Stuttgart**

IR reflection of 92%

### **3. TUM (Technical University Munich)**

according DIN4102 part 1: accepted to be used for buildings

### **4. JIS (Japanese Institute of Standardization)**

99, 5% IR long wave heat radiation from the sun  
92, 2% visual light short wave reflection

### **5. NASA (National Aeronautics and Space Administration)**

NASA 8060.1B/C, Test 1 Flammability Test Class "A" Rated and "0" Flame Spread  
NASA 8060.1C, Test 7 Toxic Off-gassing "K" Rating for Toxicity

### **6. CHINA CENTER FOR TECHNICAL TESTING**

GB/T 1771-91 - Resistance to Salt Fog (2000 hours)  
GB/T 1866-88 - Manual Aging (2000 hours)  
GB/T 10834-88 - Resistance to Salt Water (1000 hours)  
GB/T 5219-85 - Adhesion (pulling apart method) 4.07MPa  
GB/T 1733-93 - Boiling Water Immersion 8 Hours

### **7. MARINE SAFETY COUNCIL**

MSC.41 (64) Toxic Gas Generation: met all toxic gas requirements

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## CERTIFICATS

### SUPER THERM® has following certificates:

- ABS (American Bureau of Shipping)
- Passed SOLAS 1974 requirements for paints/finish materials requiring compliance with Parts 2 (Smoke & Toxicity) and 5 (Surface Flammability) of the IMO FTP Code, Res.MSC.61(67) U.S. Type Approval Certificate No. SL520997-A
- BOCA (Building Officials Code Administrators)
- CFIA (Canadian Food Inspection Agency)
- DNV (Det Norske Veritas) Certified Marine approval for world-wide salt water and maritime use. E.C. No.: 04-CH 468315-MED1
- ECAP Report (Energy Conservation Assistance Program) by Florida Energy Office
- Energy Star Program Approved partner and accepted as an energy partner for saving energy
- FM (Factory Mutual) Tested and approved for metal roofing
- GSA Approval for Federal US Government
- ICC (International Code Council)
- IMO (International Maritime Organization)  
MSC 41 smoke and toxicity: passed 653(16) Flame Spread Test for Bulkhead, Wall, and Ceiling Linings: passed
- LEEDS (Leadership in Environmental and Energy Design) SUPER THERM® is qualified for LEEDS program
- SUPER THERM® is qualified by the State of California for the 'Cool Roof Program'
- Approved and listed State of California Bureau of Home Furnishings and thermal insulation Lic. nr. TE 1392
- State of Florida Energy Rebate Program : Qualifies for a percentage reduction from cost of coating
- UL (Underwriters Laboratory) : approval
- US Coast Guard Approval No.: 164.112/EC1347/4368315/EC0729
- USDA (United States Department of Agriculture) approved



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